Supplementary File 4: All continuous time events and their corresponding propensities for event attempts at time t, denoted $\alpha_i(t)$ for event i in minutes.

i	**Event**	**Event description**	$\boldsymbol{\alpha_i(t)}$	**Assumption based on an average WT fish**
1	Movement of M.	A cell of type M is chosen to attempt movement.	$\frac{0.11N_M^T(t)}{0.04\times60\times24\times7}$	M move at a rate of 0.11mm per week [1] .
2	Movement of X^b.	A cell of type X^b is chosen to attempt movement.	$\frac{0.033N_{X^b}^T(t)}{0.02\times60\times24\times7}$	X^b move at a rate of 0.033mm per week [2].
3	Movement of X.	A cell of type X is chosen to attempt movement.	$\frac{0.033N_X^T(t)}{0.02\times60\times24\times7}$	X move at a rate of 0.033mm per week [2].
4	Movement of I^d.	A cell of type I^d is chosen to attempt movement.	$\frac{0.03N_{Id}^T(t)}{0.02\times60\times24}$	I^d migrate extensively [3]. We propose that they move at a rate of 0.03mm per day.
5	Movement of I^l.	A cell of type I^l is chosen to attempt movement.	$\frac{0.03N_{Il}^T(t)}{0.02\times60\times24}$	I^l migrate extensively [3]. We propose that they move at a rate of 0.03mm per day.
6	Proliferation of X or X^b.	A cell of type X or X^b is chosen to attempt proliferation.	$\frac{N_X^T(t)+N_{X^b}^T(t)}{60\times24\times7}$	Cells of the xanthophore lineage proliferate continuously from the onset of metamorphosis with a doubling rate of once per week [4].
7	Proliferation of I^d or I^l.	A cell of type I^d or I^l is chosen to attempt proliferation.	$\frac{1.2N_{Id}^T(t)}{60\times24}$ + $\frac{1.2N_{Il}^T(t)}{60\times24}$	S-iridophores have a doubling time of 3-4 days [5]. We implement that they attempt proliferation 1.2 times per day.
8	Differentiation of M.	A site in $\boldsymbol{M}$ is chosen where a melanocyte progenitor attempts to differentiate into a melanocyte.	$\frac{N_{Id}^T(t)}{2\times60\times24}$ + $\frac{N_X^T(t)}{10\times60\times24}$ + $\frac{300}{60\times24}$	Xanthophores and iridophores promote the differentiation of melanocytes in the long range in different strengths [6, 7]. melanocytes also differentiate independently from other cell types [7].
9	Differentiation of X^b to X.	A cell of type X^b is chosen to attempt differentiation into a cell of type X.	$\frac{N_{X^b}^T(t)}{3\times60\times24}$	We propose that X^b attempt differentiation once every three days.
10	Transition of I^d to I^l.	A cell of type I^d is chosen to attempt transition to a cell of type I^l.	$\frac{N_{Id}^T(t)}{60\times24}$	We propose that I^d attempt transition once per day.
11	Transition of I^l to I^d.	A cell of type I^l is chosen to attempt transition to a cell of type I^d.	$\frac{N_{Il}^T(t)}{60\times24}$	We propose that I^l attempt transition once per day.
12	Melanocyte death.	A cell of type M is chosen to attempt death.	$\frac{N_M^T(t)}{60\times24}$	We propose that melanocytes may die at least once per day.
13	Xanthoblast pulls a melanocyte	A cell of type X^b near to cell of type M successfully pulls a cell of type M towards itself.	$\frac{N_{X^b}^T(t)}{100\times60\times24}$	We propose that this is successful 1/100 times per day.
14	Growth in the horizontal direction.	The domain is chosen to grow in the horizontal direction.	$\frac{0.13}{0.04\times60\times24}$	Growth in the horizontal direction is 0.13mm per day [8].
15	Growth in the vertical direction.	The domain is chosen to grow in the vertical direction.	$\frac{0.033}{0.04\times60\times24}$	Growth in the vertical direction is 0.033mm per day [8].

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